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# 3SK194

Silicon N-Channel Dual Gate MOS FET

# HITACHI

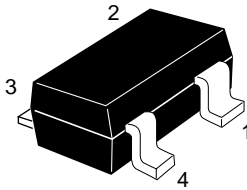
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## Application

VHF/UHF TV tuner RF amplifier

## Outline

MPAK-4



1. Source
2. Gate1
3. Gate2
4. Drain

**Absolute Maximum Ratings** ( $T_a = 25^{\circ}\text{C}$ )

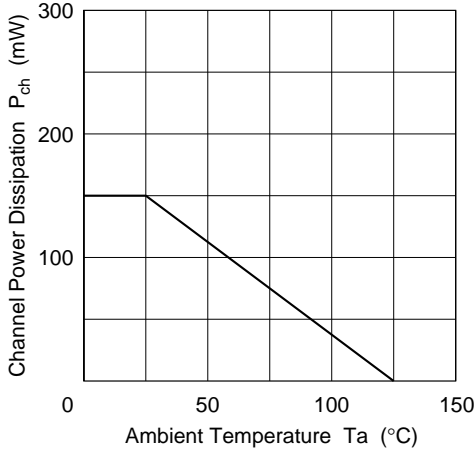
<b>Item</b>	<b>Symbol</b>	<b>Ratings</b>	<b>Unit</b>
Drain to source voltage	$V_{DS}$	15	V
Gate 1 to source voltage	$V_{G1S}$	$\pm 10$	V
Gate 2 to source voltage	$V_{G2S}$	$\pm 10$	V
Drain current	$I_D$	35	mA
Channel power dissipation	Pch	150	mW
Channel temperature	Tch	125	$^{\circ}\text{C}$
Storage temperature	Tstg	-55 to +125	$^{\circ}\text{C}$

## Electrical Characteristics (Ta = 25°C)

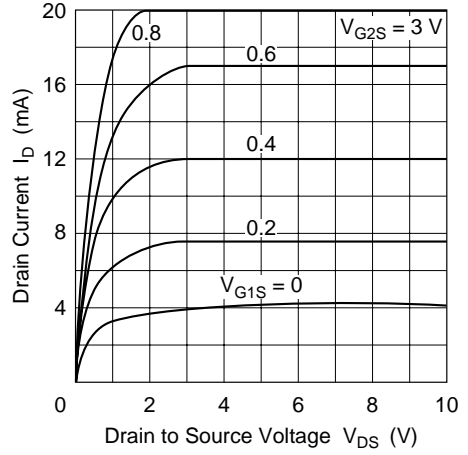
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSX}$	15	—	—	V	$I_D = 200 \mu\text{A}$ , $V_{G1S} = V_{G2S} = -5 \text{ V}$
Gate 1 to source breakdown voltage	$V_{(BR)G1SS}$	$\pm 10$	—	—	V	$I_{G1} = \pm 10 \mu\text{A}$ , $V_{G2S} = V_{DS} = 0$
Gate 2 to source breakdown voltage	$V_{(BR)G2SS}$	$\pm 10$	—	—	V	$I_{G2} = \pm 10 \mu\text{A}$ , $V_{G1S} = V_{DS} = 0$
Gate 1 cutoff current	$I_{G1SS}$	—	—	$\pm 100$	nA	$V_{G1S} = \pm 8 \text{ V}$ , $V_{G2S} = V_{DS} = 0$
Gate 2 cutoff current	$I_{G2SS}$	—	—	$\pm 100$	nA	$V_{G2S} = \pm 8 \text{ V}$ , $V_{G1S} = V_{DS} = 0$
Gate 1 to source cutoff voltage	$V_{G1S(off)}$	—	—	-1.0	V	$V_{DS} = 10 \text{ V}$ , $V_{G2S} = 3 \text{ V}$ , $I_D = 100 \mu\text{A}$
Gate 2 to source cutoff voltage	$V_{G2S(off)}$	—	—	-1.5	V	$V_{DS} = 10 \text{ V}$ , $V_{G1S} = 3 \text{ V}$ , $I_D = 100 \mu\text{A}$
Drain current	$I_{DSS}$	0	—	10	mA	$V_{DS} = 6 \text{ V}$ , $V_{G1S} = 0$ , $V_{G2S} = 3 \text{ V}$
Forward transfer admittance	$ y_{fs} $	17	—	—	mS	$V_{DS} = 6 \text{ V}$ , $V_{G2S} = 3 \text{ V}$ , $I_D = 10 \text{ mA}$ , $f = 1 \text{ kHz}$
Input capacitance	Ciss	—	2.8	3.5	pF	$V_{DS} = 6 \text{ V}$ , $V_{G2S} = 3 \text{ V}$ , $I_D = 10 \text{ mA}$ , $f = 1 \text{ MHz}$
Output capacitance	Coss	—	1.8	2.5	pF	
Reverse transfer capacitance	Crss	—	0.02	—	pF	
Power gain	PG	12	15	—	dB	$V_{DS} = 6 \text{ V}$ , $V_{G2S} = 3 \text{ V}$ , $I_D = 10 \text{ mA}$ , $f = 900 \text{ MHz}$
Noise figure	NF	—	3.0	4.5	dB	
Noise figure	NF	—	3.0	4.0	dB	$V_{DD} = 12 \text{ V}$ , $V_{AGC} = 10.5 \text{ V}$ , $f = 60 \text{ MHz}$
Power gain	PG	27	30	—	dB	$V_{DS} = 6 \text{ V}$ , $V_{G2S} = 3 \text{ V}$ , $I_D = 10 \text{ mA}$ , $f = 200 \text{ MHz}$
Noise figure	NF	—	1.0	2.5	dB	

Note: Marking is "1Y-".

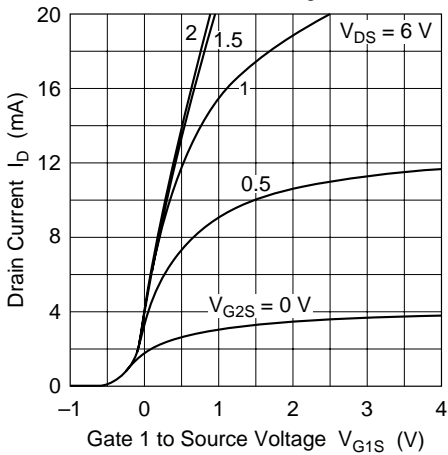
Maximum Channel Power Dissipation Curve



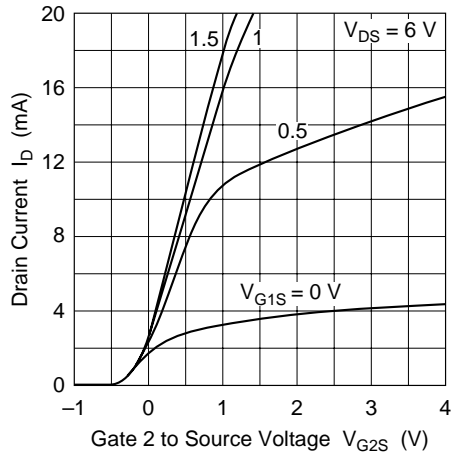
Typical Output Characteristics

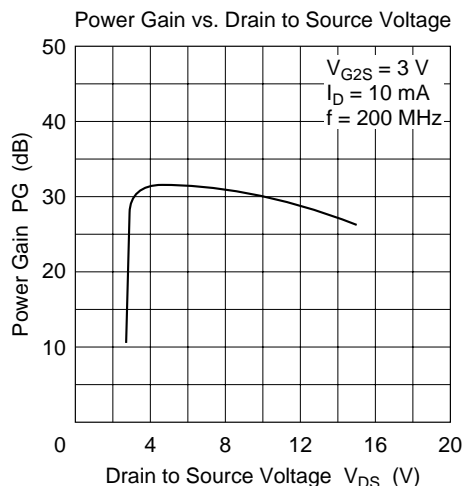
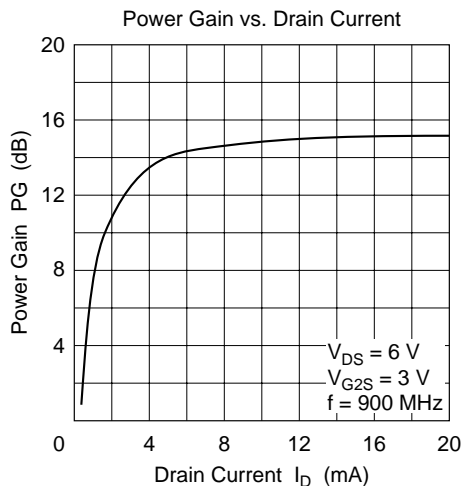
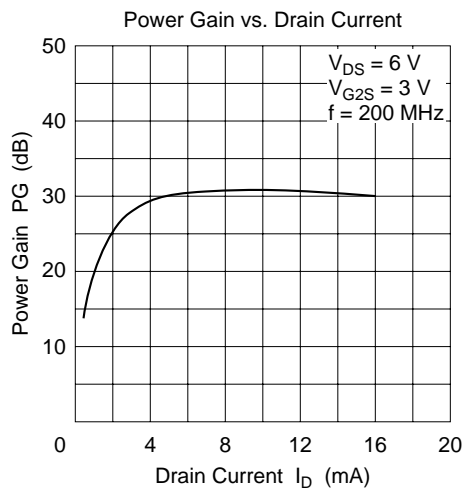
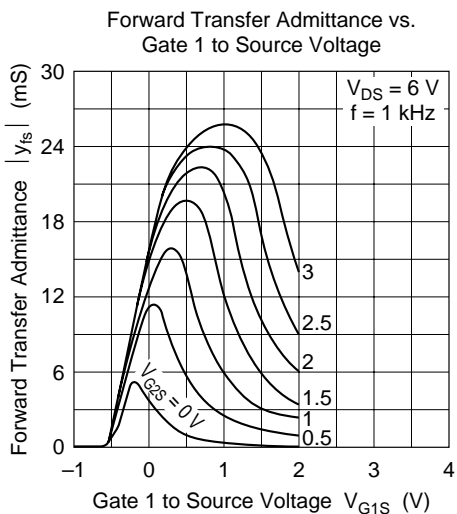


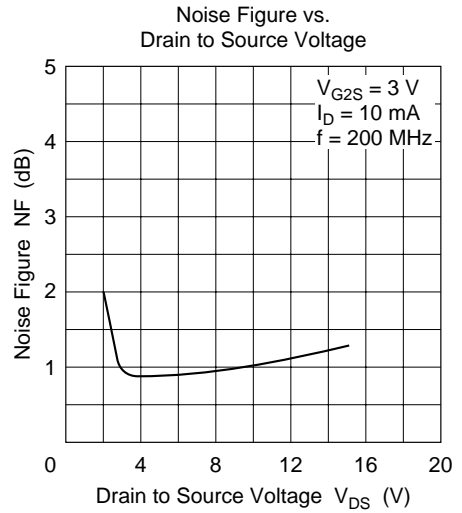
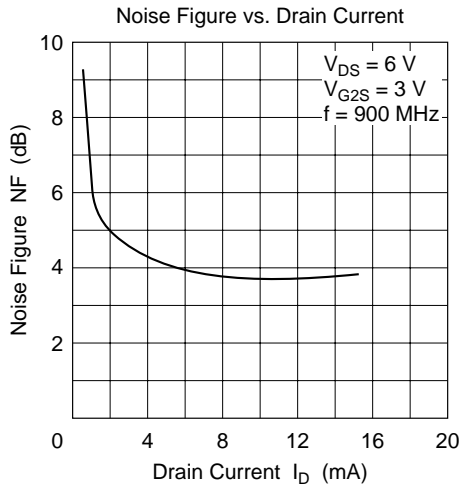
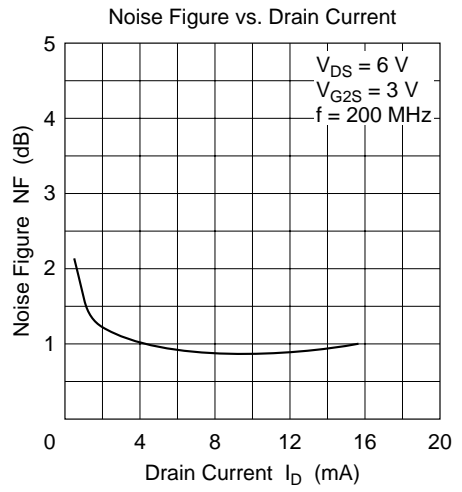
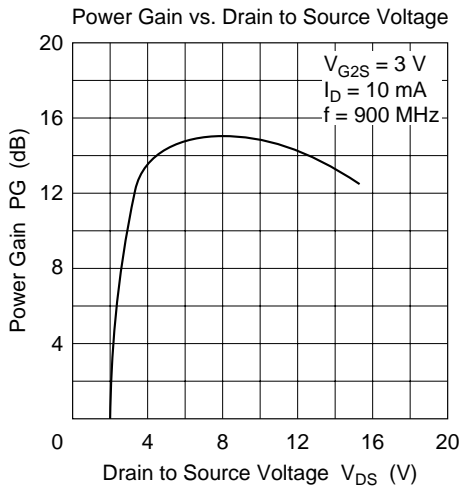
Drain Current vs. Gate 1 to Source Voltage

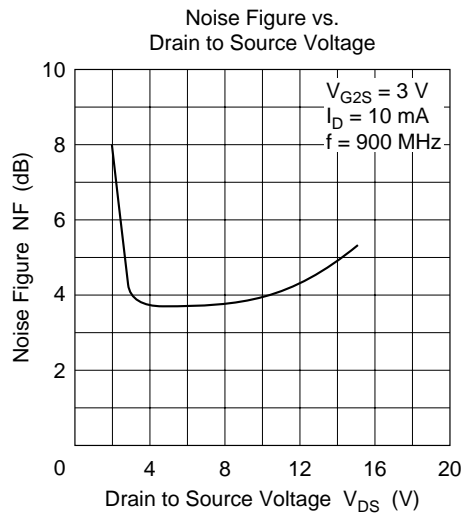


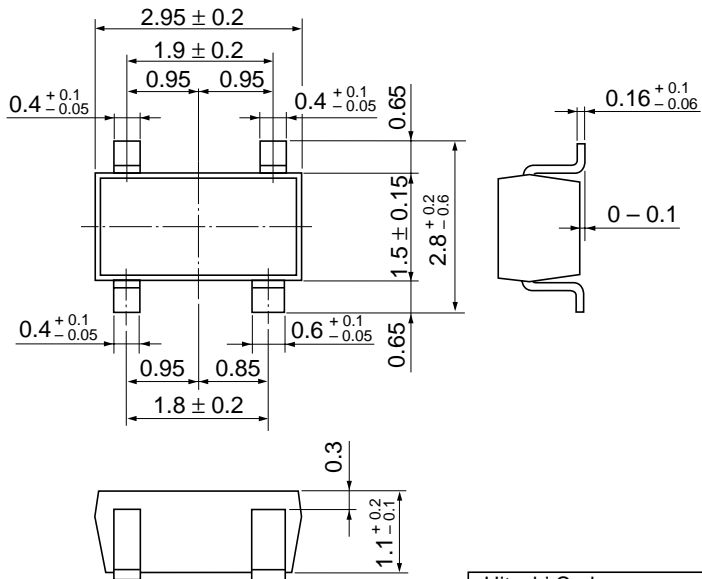
Drain Current vs. Gate 2 to Source Voltage











Hitachi Code	MPAK-4
JEDEC	—
EIAJ	Conforms
Weight (reference value)	0.013 g



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